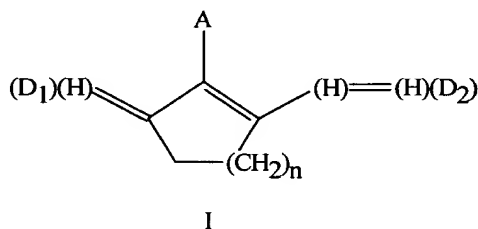


Amendments to Claims

Claim 1. (Previously Presented) A near infrared sensitive composition, comprising:

- (a) a near infrared dye photochemical sensitizer that enables the composition to undergo either
- (i) effective photopolymerization or
 - (ii) effective photoimaging upon exposure to near infrared radiation, the near infrared dye is a compound of formula I:



wherein substituent A is chosen from

- (1) a 5-6 membered heterocyclic ring system having 1-3 ring heteroatoms, in which the heteroatom is a nitrogen atom, which is substituted with a hydrogen atom, C₁-C₆ alkyl, (CH₂)_mCO₂H or (CH₂)_mCO₂(C₁-C₆ alkyl) and the carbon atom of the herocyclic ring system may be substituted with an oxygen atom to form a carbonyl or enolate anion and m is an integer ranging from 0-4;
- (2) a 5-6 membered carbocyclic moiety substituted with a hydrogen atom or a C₁-C₆ alkyl group wherein a carbon atom of the alkyl group may be substituted with oxygen to form a carbonyl or enolate anion;
- (3) a quinoline or isoquinoline group wherein the nitrogen atom is directly bonded to the carbocyclic moiety of formula I;
- (4) N,N-bisaryl or bis(C₁-C₆ alkyl) or bisaryl(C₁-C₆ alkyl) amine wherein the aryl group is a naphthyl or phenyl group which is unsubstituted or substituted with a fluorine atom, bromine atom, chlorine atom, OCH₃, CF₃, OH, or C₁-C₆ alkyl;
- (5) a heterocyclic ring system having at least one nitrogen atom bonded directly to the carbocyclic ring of formula I and a group Z which is a carbon atom, NR⁸, oxygen atom

or sulfur atom wherein R^8 is a hydrogen atom, C_1-C_6 alkyl, CO_2H or $CO_2C_1-C_6$ alkyl;

substituent D_1 is a 9-15 membered heterocyclic system comprising a heteroaryl ring system having at least one heteroatom group (U) which is an NR^3 group, oxygen atom, sulfur atom or PR^3 group which is directly bonded to the aryl portion of the heteroaryl ring system and wherein R^3 is a C_1-C_6 alkyl which may be unsubstituted or substituted with CO_2H , SO_3H or salts thereof and wherein the aryl ring may be unsubstituted or substituted with OCH_3 , CF_3 , bromine atom, chlorine atom, fluorine atom, C_1-C_6 alkyl or OH or a fused ring polycyclic heterocyclic system;

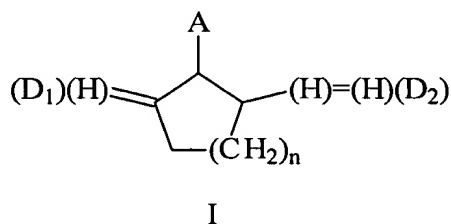
substituent D_2 has the identical heterocyclic system as substituent D_1 except that when U is NR^3 , the nitrogen atom is quaternized to form an amine salt which is neutralized by an enolate anion from A when A is a substituted pyrimidine like moiety or by a discrete (non intra-molecular) anion, provided that the discrete (non intra-molecular) anion is not a borate anion;

n is an integer ranging from 1-2;

- (b) a hexaarylbiimidazole compound as photoinitiator;
- (c) a photopolymerizable material and a chain transfer agent, or, instead of (c),
- (d) a photoimageable dye.

Claim 2. (Previously Presented) A photopolymerizable element comprising:

- (a) a support,
- (b) a photopolymerizable composition comprising
 - (i) a near infrared dye photochemical sensitizer that enables the photopolymerizable composition to undergo effective photopolymerization upon exposure to near infrared radiation, the near infrared dye is a compound of formula I:



wherein A is:

- (1) a 5-6 membered heterocyclic ring system having 1-3 ring heteroatoms, in which the heteroatom is a nitrogen atom which is substituted with a hydrogen

atom, C₁-C₆ alkyl, (CH₂)_mCO₂H or (CH₂)_mCO₂(C₁-C₆ alkyl) and the carbon atom of the heterocyclic ring system may be substituted with an oxygen atom to form a carbonyl or enolate anion and m is 0-4;

- (2) a 5-6 membered carbocyclic moiety substituted with hydrogen atom, C₁-C₆ alkyl group wherein the carbon atom of the alkyl group may be substituted with oxygen to form a carbonyl or enolate anion;
- (3) quinoline or isoquinoline groups wherein the nitrogen atom is directly bonded to the carbocyclic moiety of formula I;
- (4) N,N-bisaryl or bis(C₁-C₆ alkyl) or bisaryl(C₁-C₆ alkyl) amine wherein the aryl group is a naphthyl or phenyl group which is unsubstituted or substituted with fluorine atom, bromine atom, chlorine atom, OCH₃, CF₃, OH, C₁-C₆ alkyl;
- (5) a heterocyclic ring system having at least one nitrogen atom bonded directly to the carbocyclic ring of formula I and a group Z which is a carbon atom, NR⁸, oxygen atom, or sulfur atom wherein R⁸ is a hydrogen atom, C₁-C₆ alkyl, CO₂H or CO₂C₁-C₆ alkyl;

substituent D₁ is a 9-15 membered heterocyclic system comprising a heteroaryl ring having at least one heteroatom group (U) which is an NR³ group, oxygen atom, sulfur atom, or PR³ group which is directly bonded to the aryl portion of the heteroaryl ring system and wherein R³ is a C₁-C₆ alkyl which may be unsubstituted or substituted with CO₂H, SO₃H or salts thereof and wherein the aryl ring may be unsubstituted or substituted with OCH₃, CF₃, bromine atom, chlorine atom, fluorine atom, C₁-C₆ alkyl or OH or a fused ring polycyclic heterocyclic system;

substituent D₂ has the identical heterocyclic system as substituent D₁ except that when U is NR₃, the nitrogen atom is quaternized to form an amine salt which is neutralized by an enolate anion from A when A is a substituted pyrimidine like moiety or by a discrete (non intra-molecular) anion, provided that the discrete (non intra-molecular) anion is not a borate anion;

n is an integer ranging from 1-2;

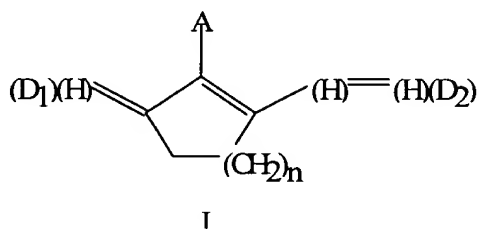
- (c) a hexaarylbiimidazole compound as photoinitiator;
- (d) a photopolymerizable material and a chain transfer agent; and
- (e) a binder polymer.

Claim 3. (Cancelled)

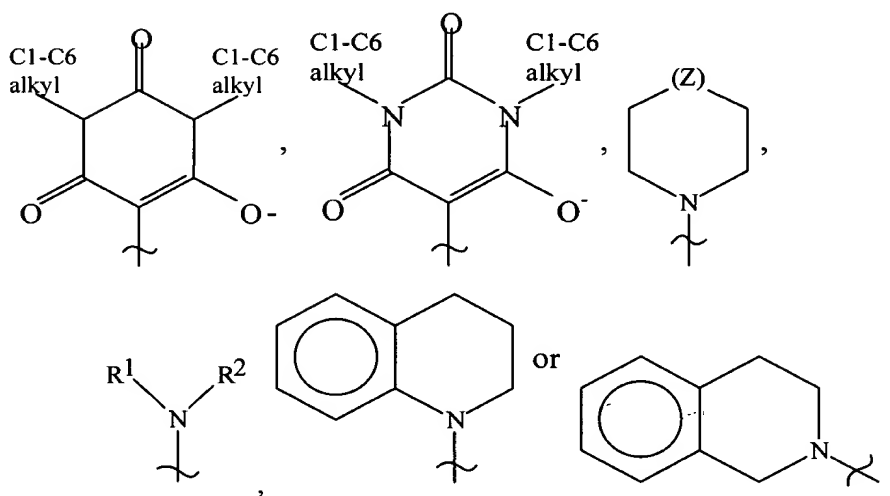
Claim 4. (Previously Presented) A photopolymerizable element comprising:

- (a) a support;
- (b) a photopolymerizable composition comprising
 - (i) a near infrared dye photochemical sensitizer that enables the photopolymerizable composition to undergo effective

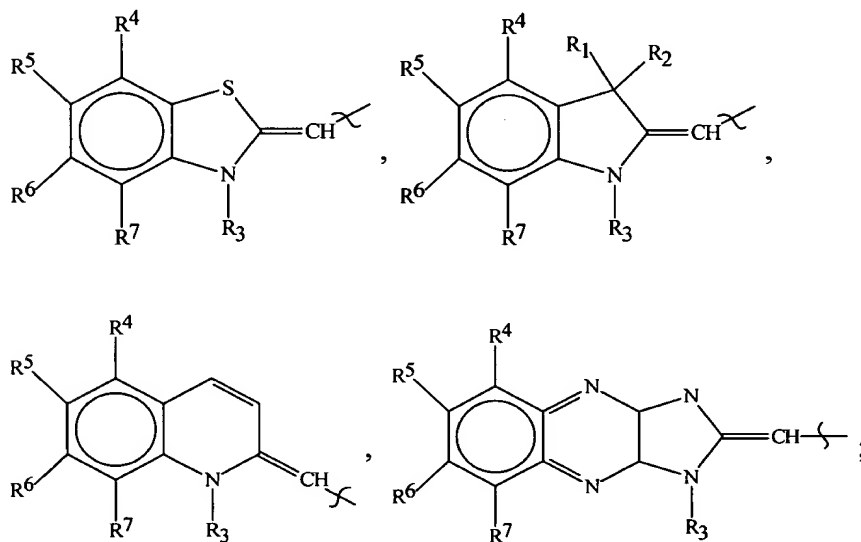
photopolymerization upon exposure to neared infrared radiation,
the near infrared dye is a compound of formula I:



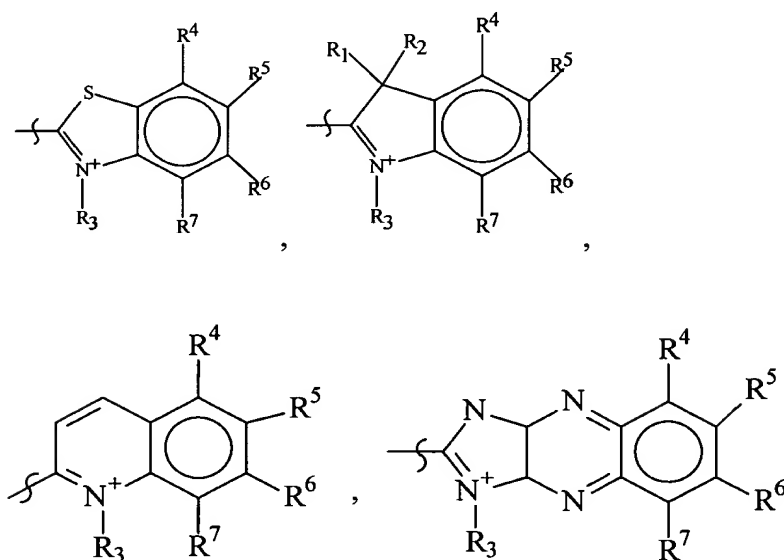
wherein A is



D1 represents a heterocyclic ring structure selected from the group consisting of:



D₂ represents a heterocyclic ring structure selected from the group consisting of



R¹ or R² are independently selected from:

C₁-C₆ alkyl, aryl wherein aryl is phenyl or naphthyl which may be unsubstituted or substituted with halogen, -O(C₁-C₆ alkyl), Oaryl, aryl or CF₃, (C₁-C₆ alkyl) aryl or hydrogen;

R₃ is C₁-C₆ alkyl, C₁-C₆ alkylsulfonate, C₁-C₆ alkyloxycarbonyl, C₁-C₆ alkyl, or C₁-C₆ alkylcarboxy;

Z is selected from NR⁸, C, O or S wherein R⁸ is H, C₁-C₆ alkyl, CO₂H or CO₂(C₁-C₆ alkyl);

R⁴-R⁷ are independently selected from H, OCH₃, CF₃; or any two of R⁴-R⁷ which when ortho substituents may join to form a phenyl ring; n is an integer ranging from 1-2 with the proviso that D₂ is selected to be the quaternized heterocyclic ring structure that corresponds to D₁ such that D₁ and D₂ together form a pair of heterocyclic ring structures;

- (c) a hexaarylbiimidazole compound as photoinitiator;
- (d) a photopolymerizable material and a chain transfer agent; and
- (e) a binder polymer.

Claim 5. (Previously Presented) A near infrared sensitive composition, comprising:

(a) a near infrared dye photochemical sensitizer that enables the composition to undergo either

- (i) effective photopolymerization or
- (ii) effective photoimaging upon exposure

to near infrared radiation wherein the near infrared dye is selected from the group consisting of DF-1413, DF-1419, DF-1422, DF-1429, DF-1668, DF-15118, DF-15131, DF-15132, NK-3877, GW-826, GW-436, GW-776, GW-976, and NK-2268;

(b) a hexaarylbiimidazole compound selected from the group consisting of o-Cl-HABI, CDM-HABI, 2,3,5-TCI-HABI, and TCTM-HABI; and

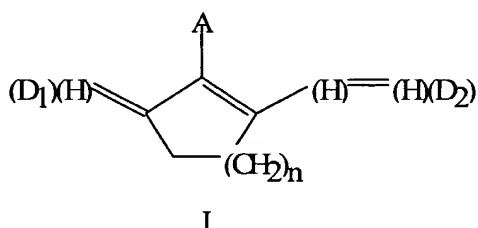
(c) a photopolymerizable material selected from the group consisting of tripropylene glycol diacrylate, trimethylolpropane triacrylate, ethoxylated trimethylolpropane triacrylate, propoxylated trimethylolpropane triacrylate, ethoxylated Bisphenol A dimethacrylate, and triethylene glycol dimethacrylate, and a chain transfer agent selected from the group consisting of N-phenylglycine, julolidine, 2-mercaptobenzoxazole, 2,6-diisopropyl-N,N-dimethylaniline, a borate salt and an organic thiol.

Claim 6. (Currently Amended) ~~The composition according to Claim 3~~ A near infrared sensitive composition comprising:

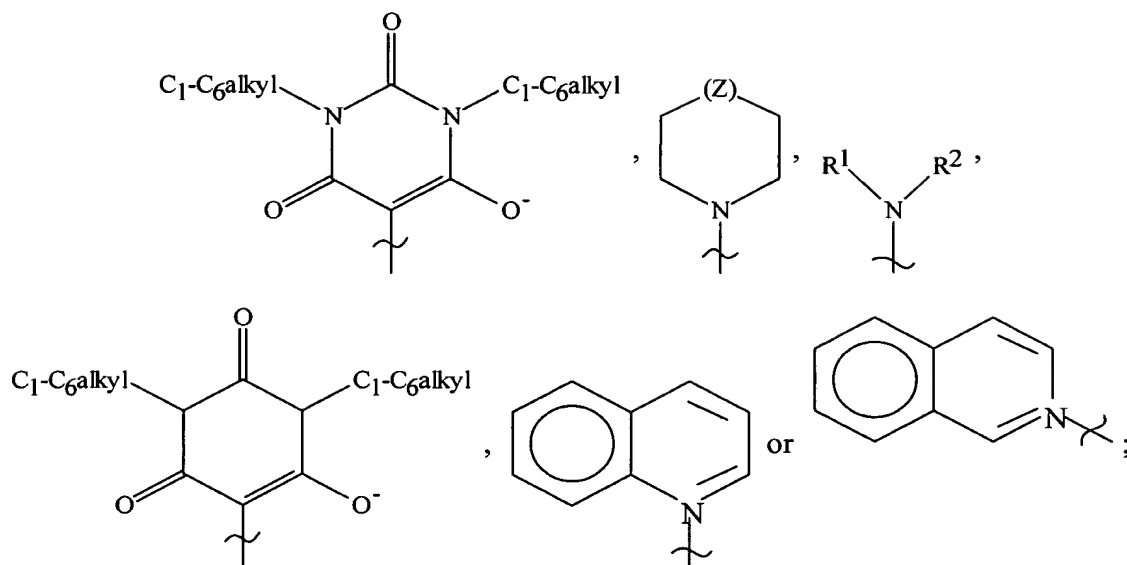
(a) a near infrared dye photochemical sensitizer that enables the composition to undergo either

(i) effective photopolymerization or

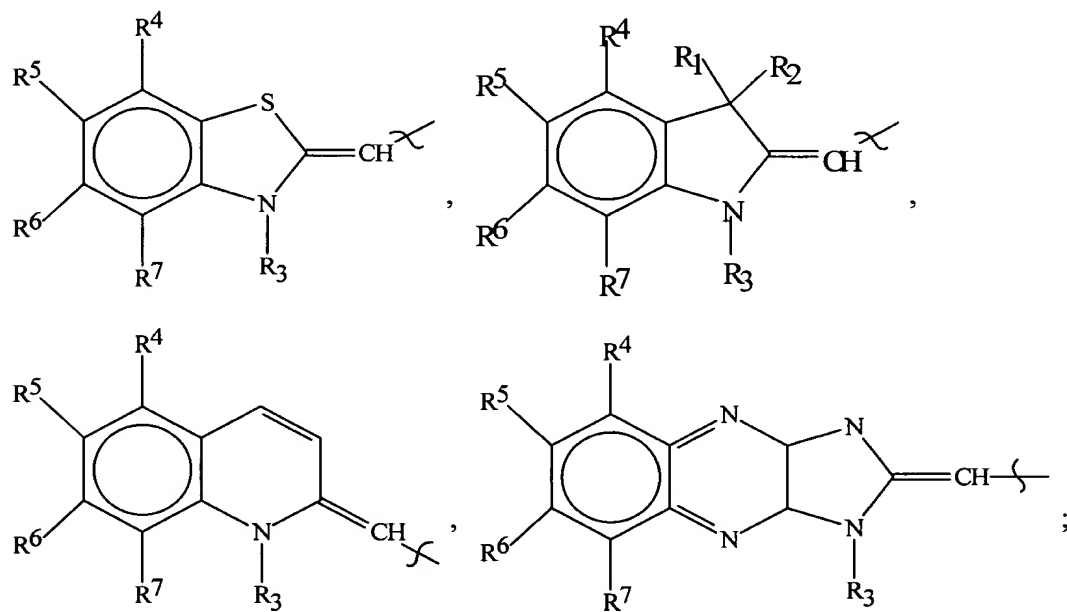
(ii) effective photoimaging upon exposure to near infrared radiation,
the near infrared dye is a compound of formula I:



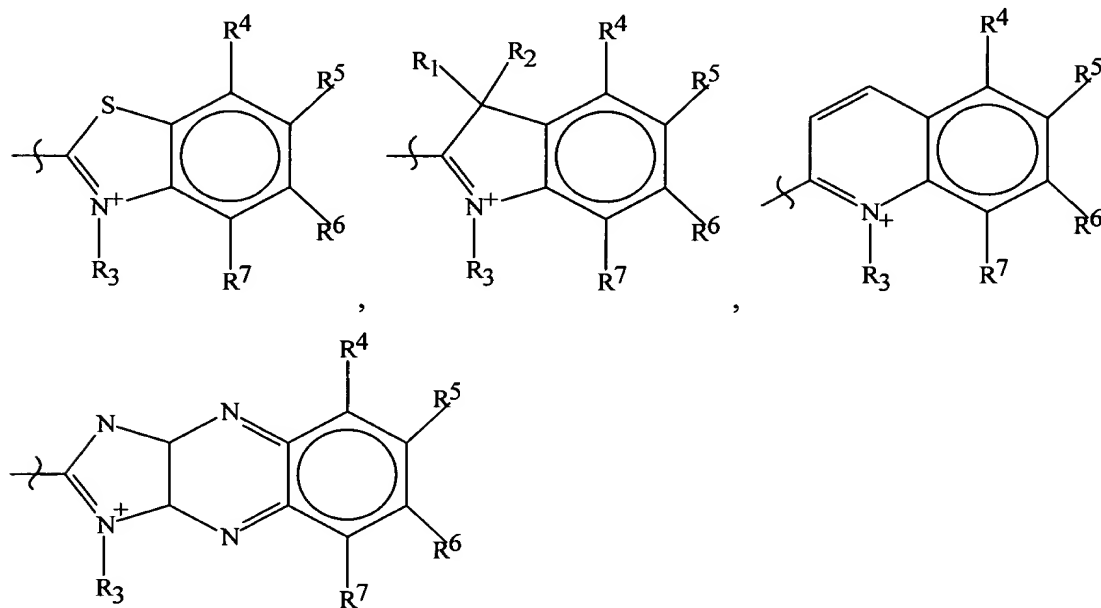
wherein A is selected from the group consisting of



D₁ represents a heterocyclic ring structure selected from the group consisting of



D₂ represents a heterocyclic ring structure selected from the group consisting of



R₁ or R₂ are independently selected from:

C₁-C₆ alkyl;

aryl wherein aryl is phenyl or naphthyl which may be unsubstituted or substituted with halogen, -O(C₁-C₆ alkyl), Oaryl, aryl or phenyl, CF₃ (C₁-C₆ alkyl)(C₁-C₁₀ aryl) or hydrogen;

R₃ is C₁-C₆ alkyl, C₁-C₆ alkylsulfonate, C₁-C₆ alkyloxycarbonyl, C₁-C₆ alkyl, or carboxy C₁-C₆ alkyl;

Z is selected from NR⁸, C, O or S wherein R⁸ is H, C₁-C₆ alkyl, CO₂H or CO₂(C₁-C₆ alkyl);

R⁴-R⁷ are independently selected from H, OCH₃, CF₃; or any two of R⁴-R⁷ which when ortho substituents may join to form a phenyl ring;

with the proviso that D₂ is selected to be the quaternized heterocyclic ring structure that corresponds to D₁ such that D₁ and D₂ together form a pair of heterocyclic ring structures;

and

n is 1-2;

provided that when A contains an enolate anion, a counterion L[⊖] is not present;

(b) a hexaarylbiimidazole compound as photoinitiator;

(c) a photopolymerizable material and a chain transfer agent; or, instead of (c);

(d) a photoimageable dye.

Claim 7. (Currently Amended) The composition according to ~~Claim 3~~ Claim 1, wherein the near infrared dye is selected from the group consisting of DF-1413, DF-1419, DF-1422, DF-1429, DF-1668, DF-15118, DF-15131, DF-15132, NK-3877, GW-826, GW-436, GW-776, GW-976, and NK-2268; the hexaarylbiimidazole compound is selected from the group consisting of o-Cl-HABI, CDM-HABI, 2,3,5-TCl-HABI, and TCTM-HABI;

wherein the photopolymerizable material is selected from the group consisting of tripropylene glycol diacrylate, trimethylolpropane triacrylate, ethoxylated trimethylolpropane triacrylate, propoxylated trimethylolpropane triacrylate, ethoxylated Bisphenol A dimethacrylate, and triethylene glycol dimethacrylate, and the chain transfer agent is selected from the group consisting of N-phenylglycine, julolidine, 2-mercaptobenzoxazole, 2,6-diisopropyl-N,N-dimethylaniline, and an organic thiol; or the photoimageable dye is selected from the group consisting of LCV, LECV, LPCV, LBCV, LV-1, LV-2 and LV-3.

Claim 8. (Currently Amended) The composition according to ~~Claims 1, 2, 3 or 4~~ Claims 1, 2 or 4 wherein the near infrared dye is present in at least 0.5% by weight of the total composition; the hexaarylbiimidazole compound is present in at least 0.5% by weight of the total composition; and the photopolymerizable material is present in at least 20% by weight of the total composition and the chain transfer agent is present in at least 0.1% by weight of the total composition; ~~or the photoimageable dye is present in at least 0.5% by weight of the total composition.~~

Claim 9. (Currently Amended) The composition according to ~~Claims 1, 2, 3, 4~~ Claims 1 or 5 which further comprises a binder polymer.

Claim 10. (Cancelled)

Claim 11. (Cancelled)